Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1 – 12. Cancelled.

13. **(currently amended)** ~~The apparatus of claim 11~~ An apparatus to limit power to a load, comprising:

a power source to drive the load using an input signal;

a voltage monitor coupled to the power source to detect a voltage supplied by the power source and to provide a voltage signal representative of said voltage;

a current monitor coupled to the power source to detect a current supplied by the power source and to provide a current signal representative of said current;

a control circuit to receive said voltage signal and said current signal, said control circuit to provide a value based on said voltage signal and said current signal according to control parameters which include a power averaging time and a power threshold; and,

a signal attenuator coupled to the power source and the control circuit, the signal attenuator to limit said input signal based on said value, wherein an averaging coefficient (T_A) is calculated by the control circuit using the power averaging time according to $T_A = e^{\frac{-n}{t_a f_s}}$, where n is a filter order, t_a is the power averaging time in seconds, and f_s is a sampling frequency.

14. **(currently amended)** The apparatus of claim [[12]] 13 wherein said value is a gain value, and wherein the control circuit calculates the gain value using the power threshold expressed as follows:

$$gain = \sqrt{\frac{P_T A_I A_V}{L}},$$

where L is an averaged power level, P_T is the power threshold, A_I is a corrective factor for the current signal, A_V is a corrective factor for the voltage signal ~~and T_R is a release coefficient~~.

15. **(currently amended)** The apparatus of claim [[14]] <u>13 wherein the control parameters further include an attack time and a release time, and</u> wherein [[the]] <u>a</u> release coefficient <u>(T_R)</u> is calculated by the control circuit according to,

$$T_R = e^{\frac{-n}{t_R f_s}},$$

where n is a filter order, t_R is the release time, and f_s is a sampling frequency.

16 – 20. Cancelled.

21. **(currently amended)** The apparatus of claim [[20]] <u>13 wherein the control parameters further include a thermal threshold value</u>, wherein the thermal threshold value is calculated according to,

$$\frac{R_T}{R_0} = 1 + \alpha(T_T - T_0) + \beta(T_T - T_0)^2,$$

where and are thermal coefficients of resistance, T_0 is a resistance of said load at ambient temperature and T_T is a threshold temperature of the load.

22. **(original)** The apparatus of claim 21, wherein said value is a gain value, and wherein the control circuit calculates said gain value using the thermal threshold value expressed as follows:

$$gain = \frac{R_0 A_I I}{R_T A_V I_0},$$

where A_I is a corrective factor for the current signal, A_V is a corrective factor for the voltage signal, I_0 is representative of a modeled current and I is representative of a measured current.

23 – 33. Cancelled

34. **(currently amended)** ~~The apparatus of claim 32~~ <u>An apparatus to limit power to a load, comprising:</u>

<u>a power source to drive the load;</u>

<u>a monitor coupled to the power source to detect a power level supplied by the power source and to provide a power signal representative of said power level;</u>

<u>a control circuit to receive said power signal and to provide a value based on said power signal according to one or more control parameters which include a power averaging time and a power threshold; and,</u>

<u>a signal attenuator coupled to the power source and the control circuit, the signal attenuator to limit said power level based on said value,</u> wherein an averaging coefficient (T_A) is calculated by the control circuit using the power averaging time according to $T_A = e^{\frac{-n}{t_a f_s}}$, where n is a filter order, t_a is the power averaging time in seconds, and f_s is a sampling frequency.

35. **(currently amended)** The apparatus of claim [[33]] <u>32</u> wherein said value is a gain value, and wherein the control circuit calculates the gain value using the power threshold according to,

$$gain = \sqrt{\frac{P_T A_I A_V}{L}},$$

where L is an averaged power level, P_T is the power threshold, A_I is a corrective factor for the current signal, A_V is a corrective factor for the voltage signal ~~and T_R is a release coefficient~~.

36. **(currently amended)** The apparatus of claim [[35]] 34 wherein the one or more control parameters further include an attack time and a release time, and wherein ~~the recovery~~ a release coefficient (T_R) is calculated by the control circuit expressed as follows:

$$T_R = e^{\frac{-n}{t_R f_s}},$$

where n is a filter order, t_R is the release time and f_s is a sampling frequency.

37 – 41. Cancelled.

42. **(currently amended)** The apparatus of claim [[41]] 34 wherein the one or more control parameters further include a thermal threshold value, wherein the thermal threshold value is calculated according to,

$$\frac{R_T}{R_0} = 1 + \alpha(T_T - T_0) + \beta(T_T - T_0)^2,$$

where and are thermal coefficients of resistance, T_0 is a resistance of said load at ambient temperature and T_T is a threshold temperature of the load.

43. **(original)** The apparatus of claim 42, wherein said value is a gain value, and wherein the control circuit calculates said gain value using the thermal threshold value expressed as follows:

$$gain = \frac{R_0 A_I I}{R_T A_V I_0},$$

where A_I is a corrective factor for the current signal, A_V is a corrective factor for the voltage signal, I_0 is representative of a modeled current and I is representative of a measured current.

44 – 54. Cancelled.

55. **(currently amended)** The method of claim [[53]] <u>56</u> further comprising calculating an averaging coefficient (T_A) using the power averaging time according to $T_A = e^{\frac{-n}{t_a f_s}}$, where n is a filter order, t_a is the power averaging time in seconds, and f_s is a sampling frequency.

56. **(currently amended)** ~~The method of claim 54 wherein said value is a gain value, the method further comprising~~ <u>A method for limiting power to a load comprising:</u>

<u>driving the load with an input signal;</u>

<u>providing a voltage signal that is representative of a voltage of the input signal;</u>

<u>providing a current signal that is representative of a current of the input signal;</u>

<u>calculating a gain value based on said voltage signal and said current signal according to one or more control parameters which include at least one of a power averaging time, a power threshold, an attack time and a release time;</u>

<u>limiting the input signal based on the value; and</u>

calculating the gain value using the power threshold according to,

$$gain = \sqrt{\frac{P_T A_I A_V}{L}},$$

where L is an averaged power level, P_T is the power threshold, A_I is a corrective factor for the current signal, A_V is a corrective factor for the voltage signal ~~and T_R is a release coefficient~~.

57. **(currently amended)** The method of claim 56 further comprising calculating ~~the~~ a release coefficient (T_R) according to,

$$T_R = e^{\frac{-n}{t_R f_s}},$$

where n is a filter order, t_R is the release time and f_s is a sampling frequency.

58 – 62. Cancelled.

63. **(currently amended)** The method of claim [[62,]] 56 wherein the one or more control parameters further include a thermal threshold value, the method further comprising calculating the thermal threshold value expressed as follows:

$$\frac{R_T}{R_0} = 1 + \alpha(T_T - T_0) + \beta(T_T - T_0)^2,$$

where and are thermal coefficients of resistance, T_0 is a resistance of said load at ambient temperature and T_T is a threshold temperature of the load.

64. **(currently amended)** The method of claim 63, ~~wherein said value is a gain value, and wherein the method~~ further comprises calculating said gain value using the thermal threshold value according to,

$$gain = \frac{R_0 A_I I}{R_T A_V I_0},$$

where A_I is a corrective factor for the current signal, A_V is a corrective factor for the voltage signal, I_0 is representative of a modeled current and I is representative of a measured current.

65 – 68. Cancelled.

69. **(currently amended)** The method of claim [[68]] 70 further comprising calculating an averaging coefficient (T_A) using the power averaging time according to $T_A = e^{\frac{-n}{t_a f_s}}$, where n is a filter order, t_a is the power averaging time in seconds, and f_s is a sampling frequency.

70. **(currently amended)** ~~The method of claim 68 wherein the value is a gain value, and the method further comprises~~ A method for limiting power to a load comprising:

driving the load with an input signal from a power source;

providing a power signal that is representative of a power level of the input signal;

calculating a value based on said power signal according to one or more control parameters which include at least one of a power averaging time, a power threshold, an attack time and a release time;

limiting the input signal based on the value; and

calculating the gain value using the power threshold according to,

$$gain = \sqrt{\frac{P_T A_I A_V}{L}},$$

where L is an averaged power level, P_T is the power threshold, A_I is a corrective factor for the current signal, A_V is a corrective factor for the voltage signal ~~and T_R is a release coefficient~~.

71. **(currently amended)** The method of claim 70 further comprising calculating ~~the~~ a release coefficient (T_R) according to,

$$T_R = e^{\frac{-n}{t_R f_s}},$$

where n is a filter order, t_R is the release time and f_s is a sampling frequency.

72 – 74. Cancelled.

75. **(currently amended)** The method of claim [[74]] 70 wherein the one or more control parameters further include a thermal threshold value, the method further comprising calculating the thermal threshold value expressed as follows:

$$\frac{R_T}{R_0} = 1 + \alpha(T_T - T_0) + \beta(T_T - T_0)^2,$$

where and are thermal coefficients of resistance, T_0 is a resistance of said load at ambient temperature and T_T is a threshold temperature of the load.

76. **(currently amended)** The method of claim 75, ~~wherein said value is a gain value, and wherein the method further comprises control circuit calculates~~ further comprising calculating said gain value using the thermal threshold value expressed as follows:

$$gain = \frac{R_0 A_I I}{R_T A_V I_0},$$

where A_I is a corrective factor for the current signal, A_V is a corrective factor for the voltage signal, I_0 is representative of a modeled current and I is representative of a measured current.